

**Opinion on
Flexible Capacity Procurement: Risk of Retirement**

by

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Summary

The Market Surveillance Committee (MSC) of the California Independent System Operator (CAISO) has been asked to provide an opinion on the CAISO's proposals on Flexible Capacity Procurement (FCP) for units at Risk of Retirement (ROR). Earlier versions of the FCP proposal have been discussed during MSC meetings in 2012 and, most recently, at the August 14, 2012 MSC meeting. In addition, MSC members have participated in stakeholder calls and have reviewed stakeholder comments submitted to the ISO.

While agreeing with several areas of potential concern identified by stakeholders, we support the FCP initiative overall as a transition mechanism. There is a high degree of uncertainty about market conditions and reliability needs in the CAISO system over at least the next half-decade. To the extent that the market environment and the current resource adequacy design is leading to outcomes that the CAISO can demonstrate threaten reliability, it is reasonable for it to be able to take steps that mitigate those threats.

This is fundamentally a "backstop" mechanism, meant to come into play only when the market and regulatory procurement falls short in some way. As with any backstop authority, a primary concern is how the presence of the backstop may distort market procurement away from more reliable and efficient choices. While we believe that the CAISO has tried to limit such potential negative feedback, there will likely be some impact and it is impossible to predict all of the possible consequences of implementing this back up procurement mechanism. We therefore support a measure that would sunset this mechanism, and would favor a time-based

sunset, such as 5 years, over the current proposal whose sunset provision uses a criterion based on market conditions that the CAISO itself can influence.

Last, we note that this process highlights the different perspectives of the institutions governing California's electricity markets, particularly the CAISO and California's Local Regulatory Authorities (LRA), particularly the California Public Utilities Commission (CPUC). There are important fundamental questions to be resolved about the appropriate trade-off between levels of reliability and costs. All Californians would benefit from a unified vision on the proper balance of reliability and costs, and the best methods to achieve this balance.

1. Background

1.1 The Problem

The current combination of long-term procurement planning (LTPP), one-year resource adequacy (RA), and other policies such as the renewable portfolio standard (RPS) have created an apparent surplus of "generic" capacity. The current glut of capacity has apparently contributed to lower revenues for suppliers. Under these conditions, at least one plant placed in service after 2000 has indicated plans to retire and move critical equipment to other sites, and other plants may make similar decisions.

However some planning scenarios indicate that an irreversible retirement of "flexible" units now could result in a shortfall of such capacity over a 4 or 5 year time horizon. It is clear that plants not currently in the planning pipeline would be unlikely to be available in such a time-horizon, and even plants currently in the pipeline have some uncertainty associated with their in-service dates. Moreover, if the capacity provided by these retiring plants would be needed in a few years, it would potentially be far more expensive for ratepayers to replace them with new capacity in just a few years than to keep this capacity in operation or available.

In addition, there is an unusually large amount of uncertainty surrounding the future configuration of generation supply in the state. Environmental restrictions on plants using once-through-cooling (OTC) could lead to potentially large amounts of unit retirements over the next half-decade, but the exact amount of retirement is not known at this time.

Given these conditions, CAISO staff believes that reliability will be threatened if too many relatively modern and flexible plants retire, and that a new policy informed by a forward-looking analysis of needs for reliability is necessary to "backstop" the RA market. The objective of such a policy should be to prevent such units from exiting the market prior to the time that important uncertainties in the market, such as OTC retirements, have been resolved.

There are two important dimensions to this problem. One is the fact that the current requirements for resource adequacy do not distinguish more flexible sources from other types of capacity. In this sense, the CAISO views the backstop as filling a gap for “flexibility” that the current RA market does not address.

The second issue is the time frame question. Some units may in fact be in demand under RA in a few years, but are uneconomic in the near term. This would be the case, for example, if some plants are currently lower cost than others that are planning to retire, but would be much more expensive to keep in operation over the long-run once the OTC restrictions are in force. In this sense, the FCP is essentially providing “bridge funding” to units that will be needed in future years.

These issues should also be considered in the context of the broader resource adequacy debate. Two fundamental questions about resource adequacy products are why are they needed, and what do they buy?

Regarding the first question, one must ask why the market solution is not the “right” one, thus justifying the creation of the FCP mechanism? If there are no customers for a plant, and its owners want to exit, should an ISO interfere with that decision? If the market is expected to change in future years, would not expected future earnings from the energy, ancillary services, and resource adequacy markets provide an incentive for customers to pay to keep a plant around, or for its owners to absorb short-term losses in the hope of future compensation? One could argue that if the retirement of a plant will result in RA capacity shortage in future years, the resulting future RA scarcity prices should induce load-serving entities (LSEs) to enter into forward contracts for future RA that will provide the necessary income to support the plant revenue stream so that it will not retire. So the question is whether the problem is a lack of information -- implying it would be sufficient for the CAISO to inform the market of its assessment of future reliability needs -- or whether there is a more serious market failure that requires remedy through an out-of-market-action such as the proposed FCP.

Similarly, if large amounts of new renewable capacity cause energy prices to become sufficiently volatile, there are potentially large financial gains for flexible units that can respond to that volatility, and large savings for customers who can procure the services of such flexible capacity. Flexible units that can quickly ramp up to provide energy in high price intervals and, symmetrically, ramp down in low price intervals will earn greater net revenues as a result of their optionality compared to what can be earned by similar cost, but less flexible units. Further, with the introduction this year of a flexiramp constraint in the real-time market, and the likely creation of a flexible ramping product in both day-ahead and real-time markets in the near future, generation capacity that can quickly adjust its input can potentially obtain additional income streams. In the second quarter of 2012, flexiramp payments amounted to about \$19M, nearly twice the payments for spinning reserve. With additional revenues in the short-run energy and related services markets, it can be argued that there would not be “missing money” for flexible generation that needs

to be compensated for through a RA-style side payment, or at least no more missing money than for any other type of capacity needed by the market.¹

1.2 Potential Underlying Causes

We now discuss some reasons why the existing resource adequacy and short-run markets might fail to provide a sufficient efficient amount of flexible capacity. We do not claim that any of these potential causes are definitively driving the current market dynamic. Rather, we think it is important to consider the underlying economic and regulatory factors that could be contributing to the current need for FCP, as the effectiveness of alternative remedies likely depends upon the cause of the problem.

- 1. Differences between the views of the CAISO and other Agencies on capacity needs, flexible or otherwise.*

If the operational reliability analysis proposed by the CAISO implies that a higher level of total capacity (flexible plus inflexible) would be needed to reliably meet future load than would be required by current RA policy, this would lead to a higher perceived future value of capacity by the CAISO than the LSEs. Even if all parties agree on the level of need for total capacity, differences in views on the level of flexible capacity required could also lead to under-procurement of those specific types of capacity. We note that stakeholder views differ on the severity and nature of the underlying problem, while we also recognize that the CAISO is currently confronting the proposed retirement of a plant it believes will be needed. Under the CAISO's standards for reliability and flexibility, the proposed retirement signals a breakdown in the logic presented at the end of the previous section that current market mechanisms are sufficient.

- 2. Price discrimination in the RA market.*

In normal markets, suppliers that were uneconomic in the short-run but economic in the long-run would remain in operation, either in expectation future profits, or through long term contracts entered into by third parties hedging against future high prices. However, some have argued that the current RA market effectively discriminates against some incumbent generation.²

¹ We note that, as a general principle, it is preferable to reward flexibility through short run energy and ancillary service markets than through differentiated payments in long run capacity markets. The reason is that short run markets will reward availability and performance when actually needed, whereas the link between payments for capacity ("iron in the ground") and actual contribution to system flexibility is much weaker.

² The argument is that current procurement practices pay pro-rated costs of new entry only to newly constructed plants. If there is sufficient supply, and buyers are concentrated, their bargaining power can allow them to set RA prices closer to going-forward costs for

The fact that suppliers indicate a preference to retire plants in the face of a near-term glut of capacity could signal that they are not confident they would earn the full market value of their capacity during coming years, even if the market did tighten. Note that this would actually be a sign of ineffective price-discrimination, since one would expect that the goal of a buyer would be to pay the bare minimum necessary to each unit to keep it from retiring. If units prefer to retire anyway, this implies that the strategy had pushed payments below that level.

Price discrimination might be sustainable in a non-transparent RA market, especially if buyers have some market power. Imperfect information regarding going-forward costs could exacerbate this situation. The resulting lack of profitability would be an inefficient outcome. If this is a significant contributor to the problem, an at least partial solution in this case would be a reform of the RA design to implement a market clearing process for RA.

3. Ambiguous buyer authority for long-run RA contracts

In a normal contracting process, capacity buyers would recognize the benefits of maintaining supply and enter into longer-term contracts with such units to keep them in operation. One potential problem would therefore be secondary market or regulatory failure that prevents such contracting. One explanation suggested by a stakeholder at the August 14 meeting would be a perceived lack of regulatory authority for regulated LSEs to enter into such long-term contracts. If this is the problem, the CPUC could eliminate it by authorizing such longer term contracts to keep needed resources in operation together with providing proper incentives to the regulated LSEs to enter into such contracts. If this is the problem, either the LSEs need to obtain better information or the RA design needs to be reformed.

4. Strategic bargaining on the part of suppliers

It is possible that a generation unit could threaten exit in order to obtain an RA payment closer to the current marginal payment for capacity. This is an analog to the price-discrimination explanation above, but on the supplier side. Such a strategy is a risk because of ambiguities inherent in defining going-forward costs, including the opportunity costs of selling the generation equipment for deployment in other markets.

5. Differing institutional views on the economic viability of specific projects.

One reason why the market may not want to provide bridge financing to a unit is that few market parties believe it would *ever* be economically viable. If the CAISO has a more favorable evaluation of the long-run economics of a resource relative to the market's views, this could trigger the FCP. This could reflect differences in the market's (and the LRAs') evaluation of the need for flexible capacity (due perhaps to different expectations about load levels or differences in expected price volatility) or

incumbent plants. The market for resource adequacy is not transparent in California, and we are not in a position to able to judge the extent to which this may be occurring.

differences in their evaluation of how much OTC capacity will retire or other new flexible capacity enter. It is also possible that the CAISO analysis regarding future need of flexible capacity is discounted by market participants in that they doubt that the forecasted RA capacity by the CAISO will actually translate into future RA requirements approved by LRAs.

If this is the source of the problem, the CAISO, the LRAs, and the LSEs need to agree on future needs. If the CAISO requires the LSEs to contract for more of one particular retiring resource, this will simply displace another resource. Some sort of LRA participation in the CAISO process for forecasting future RA needs may address such credibility issues.

2. Design Elements of the FCP product

There are many overlapping elements to the proposal, and we will not comment on every detail. Instead we organize the key elements into four categories: timing, finding of need, payment levels, and obligations of FCP units. In this section, we comment on how the proposal addresses each of these elements.

2.1 Timing of the Mechanism

In a strictly chronological sense, the mechanism is a backstop to a market process that should clear over a summer time-frame. The “primary” markets are the procurement and resource adequacy processes, overseen by the LRAs for their jurisdictional entities. If generation resources fail to sell their capacity (or services) through these processes, the CAISO can then choose whether to assess the need for FCP for that resource.

While the chronology of this process appears sound, it is difficult to predict the impact that the presence of FCP might have on the procurement and RA processes. Part of the difficulty arises because of uncertainty over the exact payment levels (discussed below). If net FCP payments exceed RA payments (that would otherwise maintain in the absence of FCP), then generators may *prefer* the FCP, and could accordingly request higher RA payments from LSEs in the conventional RA market. Conversely, if FCP payments are “too low”, LSEs that might otherwise be compelled to provide the “bridge funding” through longer-term procurement because they anticipate future market risks, could prefer to let the FCP mechanism provide the funding instead. The load incentive is complicated by the fact the FCP costs will be allocated more broadly than across a single LSE, thus allowing an LSE that might otherwise contract with a unit to “free-ride” on the FCP contributions of others. Thus even if FCP is directly more expensive, any individual LSE may still prefer it to RA procurement.

Last, given that units acquired under FCP will be given some incentive to participate in the energy and ancillary services markets, the presence of these units can depress energy prices below levels that would prevail if these units had retired, or were

mothballed. These lower energy prices and lower energy market revenues could result in “missing money” for other generators, and consequently either increase RA prices or displace other resources from the market. In short, there are risks that the FCP can feedback to the markets it is designed to backstop in ways that make the FCP more likely to be triggered.

A second timing concern is that this process will be slow and inefficient, thereby causing generation to reach ex-post “wrong” decisions either to retire despite the designation, or not retire in expectation of higher payments when faced with an uncertain outcome. Given the cost-based regulatory nature of this product, there are limited options for minimizing this risk. We note that several elements of the proposal, such as eliminating the “long-term standby” option, and minimizing the obligations to units under FCP, were adopted in part to limit the complexity of the process of cost-determination. We support these elements for this reason.

One last point to highlight on the timing question is the recently added provisions for an opportunity for an “outside agreement” to supersede a pending FCP designation. To the extent that a unit was left unsupported by a contract because LSEs were not cognizant of the unit’s importance to CAISO reliability planning, this interim period can allow for transactions to be reached with the benefit of better information. We support this addition to the proposal, while noting that the time-frame is necessarily compressed and may prove to be insufficient to achieve its goals. Moreover, how LSEs would respond depends on the ultimate source of the problem.

2.2 Finding of Need

The process for determining the need for a unit is both one of the most important and least transparent elements of the proposal. Upon receiving a notice that a resource is prepared to retire, the CAISO may conduct a simulation-based analysis of whether the unit is likely to be required for a reliability need over a 2 to 5 year time horizon.

There are ambiguities in the determination of need. For instance, the draft final proposal refers to need in terms of criteria “such as the reliability criteria of one day loss-of-load in ten years” (Section 5.1.1, p. 24). However, this is not the criterion that will actually be applied, as the draft proposal refers to “flexibility requirements” (p. 25) and notes in a footnote that “insufficient ramping capabilities may not lead to a loss of load, however, for the purposes of the ISO assessment, ramping deficiencies demonstrate a need for additional resources to avoid unacceptable levels of reliance on external balancing authorities in order to maintain system reliability” (p. 25 footnote 22). Therefore, the actual criteria for “need” will not be based on loss-of-load-expectation but rather will rely on an undefined “unacceptable levels of reliance on external balancing authorities,” i.e., an inability to maintain area control error over unspecified periods of time, at unspecified frequencies. This ambiguity in part reflects the lack of standardization in the power industry of methods for quantitatively measuring flexibility and defining the need for it. Methods are

presently being proposed and debated in IEEE, CIGRE, and elsewhere, so there is not a standard industry approach for the ISO to follow.³

Given the complexities of simulation exercises required to determine loss-of-load or area control error, this process will not be as transparent as other reliability mechanisms. Further adding to the complexity is that assumptions would need to be made about load forecasts (including impacts of energy efficiency) and retirements due to, e.g., once-through cooling requirements, the trade-off is the ability to robustly check for the reliability impact of specific units under specific scenarios, which comes at the cost of losing some transparency. While acknowledging the concerns of some stakeholders about this process, we do not see any obviously better way to proceed. A more transparent but necessarily simplistic “bright line” standard would risk missing subtle but still important contributions of specific units under specific conditions.

Several stakeholders have commented that the assumptions going into the planning model for purposes of determining need for FCP should be consistent with those used for other planning purposes. We agree with this sentiment while noting that this is not the case under the current proposal. It is our understanding that the CAISO is using more conservative assumptions with regards to energy efficiency and demand response than is used by the CPUC for its long-term planning process. We do not know what assumptions are being used for OTC retirements. Some level of modeling differences can be justified by a focus on unit flexibility, which is not currently emphasized in the resource adequacy process. However, assumptions about the *level* of demand do not appear to be as strongly related to flexibility as to overall capacity needs.

We fear that, if they persist, strongly held differences in opinion about the appropriate standards and assumptions that should be applied to planning will ultimately be destabilizing and inefficient. If the need for flexible capacity identified by the CAISO process is due to differences in assumptions regarding future load levels, for example, the proposed backstop might be continually triggered simply because, for example, CPUC standards imply a unit is not needed, while the CAISO’s standards imply that it is. This highlights the need that we noted above to understand what is causing the announced retirement of a unit identified by the CAISO as needed for reliability. Is it because the CAISO identifies greater needs than the conventional RA process, or instead because a flaw in the RA contracting framework is causing capacity that both LRAs such as the CPUC and the CAISO would agree will be needed to be uneconomic and retire prematurely?

We urge that those overseeing the California market work toward a unified vision for the correct levels of desired flexibility, and the implied reliability levels that underlie this. As such decisions contain both important implications for both costs

³ See e.g., E. Lannoye, M. Milligan, J. Adams, A. Tuohy, H. Chandler, D. Flynn, and M. O’Malley, “Integration of Variable Generation: Capacity Value and Evaluation of Flexibility,” IEEE Power Engineering Society Annual Meeting, San Diego, July 2012.

and reliability, neither the CAISO nor the LRAs should act unilaterally in pursuit of these goals. We note that the CPUC, in their most recent comments on the CAISO's proposal, have stated their willingness to cooperate on creating a backstop mechanism that appropriately considers flexibility needs.

In this context, we note that the current proposal for a sunset of FCP, which requires in part that FCP *not* be triggered over a certain length of time, can create the expectation of a self-fulfilling prophecy. If it so desired, the CAISO would have the power to ensure that the mechanism never sunsets simply by continuing to trigger it, using reliability studies for which it preserves a great degree of analytical latitude.

2.3 Compensation and Obligations

The obvious concern here is that, since payments are being determined through a regulatory, rather than market process, this process may not play out in a timely or equitable manner. In light of this concern, we agree with the CAISO's proposal to limit the options under FCP to a single "operational stand-by" track. Even so, this is relatively new ground that is being tread. We sympathize with concerns that payment levels may be decided well after a decision would need to be made on the status of a unit, but see the current framework as trying to limit this risk.

Future Obligations

For similar reasons we support the view that FCP be implemented as a single-year product. Any requirements for, or options to, renew the obligations beyond the payment year raise questions about how to appropriately value (and assign costs to) these options. This could significantly lengthen the process for determining a just and reasonable level of compensation, and raises the risk that the level of compensation could be out of proportion with the benefits provided.

We concede that a single year of FCP payments does not guarantee that a plant will not retire in future years, but a balance must be struck between the level of security provided by this process and its potential cost in both dollars and administrative time. We view the current proposal as falling along a spectrum of possible compromises among those two objectives, one end of which would be providing *no* payment and hoping the unit does not retire, the other end would be purchasing the unit outright to absolutely guarantee that there is no retirement of that unit (but potentially triggering the retirement of another unit). One argument in favor of a future obligation is that if the FCP intends to correct for a market failure, adopting a contract form that emulates a forward contract for future RA has a better chance of eventually being assumed by the market, while an FCP payment that entails no future obligation may interfere with the market solution by creating an easy way out for the suppliers of the flexible capacity. However, as explained above, the difficulty of administratively pricing the option value and supplier risk in a FCP type contract with future obligation may outweighs the benefits of such an approach, so

we opt for a simple backstop solution with the hope that a more comprehensive market oriented approach will be developed in the future.

Market Revenues

One remaining controversial aspect of the proposal deals with the retention of market revenues earned during the period in which a unit is on FCP. As we discussed above, this element can influence the incentives of both suppliers and load to reach deals outside of the FCP process. At the same time, if a unit *is* available, and has to apply all profits to offsetting FCP payments, it has little incentive to participate in the market and operate efficiently unless energy and ancillary service prices rise to the point where net market revenues would exceed the FCP payments anyway.

In light of these conflicting concerns, we find the CAISO's approach to be reasonable, although we would also be able to support a number of the options suggested by the Department of Market Monitoring. During the process, we highlighted difficulties with using bilateral agreements outside of the CAISO for the basis of measuring operating profits, and the CAISO's current proposal largely addresses those issues by omitting bilateral agreements covering energy or ancillary services, as opposed to capacity, from consideration.⁴ Ideally the calculation of operating costs should be based on all the profits that the unit *could* have earned if it was offering its energy at marginal cost. Such a provision would have created an incentive for the unit to operate whenever it is efficient for it to do so. However, the fact that the unit is not eligible for make-whole payments on a 24 hour basis may impose added risks that will motivate a unit not to operate in some hours although it is in the money. For this reason, the provision that only actual energy and ancillary service revenues from the CAISO be counted is a reasonable compromise. The provision that the resource will not be credited, i.e., made whole, for operations at a loss is likely to create inefficient incentives. These inefficiencies could arise at times when a resource should offer its output at less than its default energy bid in order to satisfy a minimum run-time constraint or stay on line overnight to avoid shutdown costs. As a consequence, these rules may need further refinement.

Another source of potential revenue for a unit is being designated as backstop capacity and remunerated through CPM payments. We support the CAISO final proposal to claw back such payments from the FCP payments.

⁴ The CAISO would still require reporting of any bilateral RA payments, and would apply 100% of those revenues toward offsetting the FCP payments. This could leave an incentive to reach low-value RA contracts if the difference between market and contract value could be transferred from buyer to seller by some other means or payments outside of CAISO's vision.

3. Summary

While we support the adoption of the current FCP proposal, we again emphasize two important implications of the need for such an instrument. First, this mechanism is explicitly designed to be a backstop. Many elements of the product are different from what would be ideal if it were meant to be the *primary* means of supporting continued operation of marginal plants in the system. In the current context, we agree with the spirit of this “minimalist” approach. However, given that the impact of this mechanism on the primary markets (both current and future) is difficult to predict, we believe a firm sunset date would ensure a considered and detailed review of the mechanism’s cost and effectiveness.

At the same time, CAISO’s need for such an instrument indicates a lack of consensus amongst California policy makers concerning the right tools for promoting and ensuring appropriate levels of investment and reliability in the California market. One of the goals of electricity restructuring was to allow customer preferences, expressed through market processes, to influence this trade-off. For many reasons this goal has been elusive. Planning and reliability standards continue to be dominated by engineering measures that relate crudely, at best, to any measure of economic or consumer benefits. Traditional cost-benefit analysis principles are impossible to apply when the benefits cannot be quantified in the same terms as costs. The CAISO should not, nor does it want to, make unilateral decisions about these complex issues. We hope that this process can mark the beginning of a serious conversation about the proper measures and levels of reliability, and of the mechanisms best suited to achieve these levels.

Finally, we conclude by stating our general preference for rewarding generating unit flexibility through revenues from short run markets for energy and ancillary services rather than through capacity (resource adequacy) payments. In the absence of an obvious market flaw that results in short run markets failing to give appropriately higher revenues to flexible capacity than to inflexible capacity, there is no argument for fragmenting resource adequacy markets into submarkets for flexible and inflexible capacity. Designing such markets would also be complicated, and it is uncertain whether it would give effective incentives to provide the needed flexibility when actually needed by market operations. The CAISO is presently developing a flexible ramping product that, if it works as intended, should provide at least a large share of the incremental revenues needed to incent construction and maintenance of flexible capacity, relative to inflexible capacity.